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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,459	11/08/2001	Chi-Kyun Park	3927-5	5072

23117 7590 09/30/2003

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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 09/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,459

Applicant(s)

PARK ET AL.

Examiner

Susy N Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-36 and 62-64 is/are pending in the application.
- 4a) Of the above claim(s) 3,11-13,19 and 27-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-10,14-18,20-26,30-36,62 and 64 is/are rejected.
- 7) ☒ Claim(s) 63 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed on 6/12/2003. Claims 1, 3, 4, 6-18, 24, 25, 29-33, and 35 have been amended. Claims 2, 37-61 have been cancelled. Claims 62-64 have been added. Claims 1, 3-36, and 62-64 are pending. Claims 3, 11-13, 19, and 27-29 remain withdrawn from further consideration as being drawn to a non-elected species. Claims 1, 4-10, 14-18, 20-26, 30-36, 62, and 64 are rejected for reasons below. Claim 63 is objected to. This Office Action is made non-final as new grounds of rejection are made that are not necessitated by applicant's amendment.

Information Disclosure Statement

2. The information disclosure statement filed 6/12/2003 fails to comply with 37 CFR 1.97(c) because it lacks the fee set forth in 37 CFR 1.17(p). It has been placed in the application file, but the information referred to therein has not been considered.

Specifically, applicants attached an IDS 1449 form citing Kluger (US 4,383,103) which applicant discusses in the amendment filed on 6/12/2003.

Specification

3. The disclosure is objected to because of the following informalities:

On page 9, line 28, the phrase "nitrogen group" appears twice in succession.

On page 11, line 18, it is unclear what is meant by the word "non-examples".

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Throughout the specification, the trademark "Cellgard" appears to be spelled incorrectly and should be spelled as "Celgard".

Appropriate correction is required.

Claim Objections

4. Claim 8 is objected to because of the following informalities:

In claim 8, the preamble should be "[t]he gel polymer electrolyte" and not "[t]he gel polymer".

Appropriate correction is required.

5. Claims 4 and 20 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Dependent claim 4 further limits the epoxy group containing material when the epoxy group containing material is chosen as material (B), but claim 4 does not actually require that the epoxy group containing material be chosen as material (B).

Dependent claim 20 further limits the epoxy group containing material when the epoxy group containing material is chosen as material (B), but claim 20 does not actually require that the epoxy group containing material be chosen as material (B).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 8 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 8 and 24, the limitation that the heterocyclic amine group containing material includes aromatic tertiary amine compounds is not in the original disclosure. Page 7, lines 1-5 of the specification state that preferred aromatic tertiary amine compounds are those which contain five or more carbon atoms in addition to at least one nitrogen atom and do not state that the aromatic tertiary amine compounds are heterocyclic amine group containing materials.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 10 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 10, the limitation "wherein material (B) includes an epoxy-group containing material and/or material (B) includes an epoxy group containing material and/or a an aromatic or non-aromatic halide material an aromatic or non-aromatic halide material" is indefinite because it is unclear what the choices for material (B) are as written in the limitation.

Claims depending from claims rejected under 35 USC 112, second paragraph are also rejected for the same.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 4-10, 14-18, 20-26, 30-36, 62, and 64 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Maruyama et al. (US 6,420,072 B1).

Maruyama et al. disclose a rechargeable battery comprising a gel polymer electrolyte and the gel polymer electrolyte is a reaction product of a nitrogen containing monomer such as vinylpyridine and an epoxy containing material (see abstract; col. 4, lines 4-53; col. 5, lines 20-33; col. 5, line 54 to col. 6, line 59). The epoxy containing material can be ethylene glycol diglycidyl ether or polyethylene glycol diglycidyl ether (col. 7, lines 49-65). The amount of polymer component and the nonaqueous solvent to be used is about 100 to 5000 parts by weight of the latter per 100 parts by weight of the former and wherein the electrolyte (salt) exists as dissolved in the nonaqueous solvent (col. 4, lines 4-16). This means that the weight percentage of the polymer component ranges from $100/200 \times 100\%$ by weight (or 50 wt%) to $100/5100 \times 100\%$ by weight (or 2 wt%). Thus the range of polymer is 2 wt% to 50wt % based on the total weight of the gel polymer electrolyte. Conversely, the liquid electrolyte would be present from 50wt% to 98 wt% based on the total weight of the gel polymer electrolyte. The electrolyte can be LiClO_4 , LiBF_4 , LiPF_6 , LiAsF_6 , LiCF_3SO_3 (col. 3, lines 45-50). The concentration of the electrolyte in the nonaqueous solvent is about 0.1 to 3 M (col. 9, lines 40-44) which overlaps with the claimed range of 0.5 to 2 M.

Since the weight percentage of liquid electrolyte, the weight percentage of polymer, and the concentration of the electrolyte in the polymer gel electrolyte all overlap with the claimed ranges, the polymer gel electrolyte inherently would have an ionic conductivity of between

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about 1×10^{-3} to about 1×10^{-2} S/cm. As further evidenced by the specific examples given in Tables 2, 9, 10, and 11 of the reference, the polymer gel electrolyte using crosslinked polymers containing nitrogen besides vinylpyridine have ionic conductivities of between 1×10^{-3} to about 1×10^{-2} S/cm.

A nonwoven fabric of polyolefin of 25 micron thickness which is microporous can be used as a support for the gel (col. 14, lines 39-67 and col. 31, lines 8-35).

It is noted that applicants state on page 9, line 28 to page 10, line 1 of the specification that the nitrogen group in the gel polymer electrolyte serves to increase the cell voltage before the cell is actually charged. Thus, the rechargeable lithium batteries using this gel electrolyte of Maruyama et al. would inherently have a pre-charge voltage of at least about 0.3 V or greater due to the presence of the nitrogen group in the polymer electrolyte.

The court has held that claiming of a property or characteristic which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). See also MPEP 2112 and 2112.01. When the Examiner has provided a sound basis for believing that the products of the applicant and the prior art are the same, the burden of proof is shifted to the applicant to prove that the product shown in the prior art does not possess the characteristics of the claimed product. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

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Allowable Subject Matter

13. Claim 63 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art of record, Maruyama et al., does not disclose, teach, or suggest that the nitrogen containing polymer is poly(2-vinyl-pyridine-co-styrene) in the gel electrolyte.


Conclusion

Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Friday from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/ 

Susy Tsang-Foster
Primary Examiner
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